Comment #1

From: John Mosley [jmosley@plpt.nsn.us]
Sent: Monday, June 14, 2010 12:14 PM
To: Schmidt, Jane C
Subject: Comment on Draft FONSI LO-10-01

Dear Ms. Schmidt,

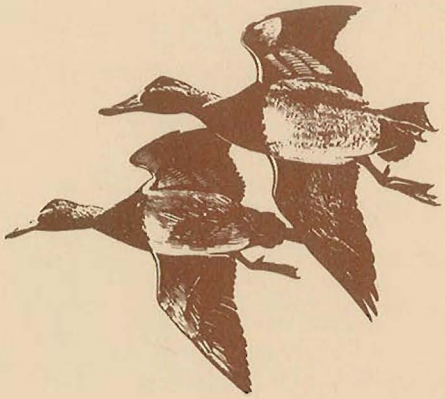
In regards to the FONSI, LO-10-01, I would like to make a comment.

This program is important to the Pyramid Lake Paiute Tribe and the retirement of water rights that will increase flows to Pyramid Lake is of utmost importance to the lake, not only for the survival of the endangered Cui-ui and threatened Lahontan Cutthroat Trout, but also for the benefit of water quality in the Truckee River and the restoration of the woodland resources near adjacent to the river. This is a great program and we look forward to its continuance.

Sincerely,

John Mosley
Environmental Director
Pyramid Lake Paiute Tribe
PO Box 256
Nixon, NV 89424
p: 775.574.0101x13
f: 775.574.1025
c: 775.354.5290

Comment #2



Jane Schmidt
Natural Resource Specialist
U.S. Bureau of Reclamation
Lahontan Basin Area Office
705 N. Plaza Street, Room 320
Carson City NV 89701

June 18, 2010

Dear Ms. Schmidt;

Thank you for sending me a copy of the Bureau of Reclamation's Draft of the Newlands Project Water Rights Retirement Program and for allowing me to comment on the EA. Unfortunately, I did not get of A.B. 380 in 1999 and did not have a chance to comment on that bill or the EA. Consequently I can only comment on the current EA as prepared by the Bureau.

I do have a couple of questions and comments I would like to express. A percentage of the water rights purchased by the Fish and Wildlife Service (Service), State of Nevada (State), and Nevada Waterfowl Association (NWA) were deemed inactive and not transferable to the Lahontan Valley Wetlands (LVW). Could these or have they been incorporated into this action and be credited to the 6,500 acre total? I know that some water rights purchased under AB 308 were active water rights and were not transferred to the wetlands. Under this latest proposed action, could any active water rights acquired be transferred to the wetlands to help meet the goal of 75,000 acre-feet. Unless this is done, there would be two competing government water-right purchasing actions that impact each other.

Since one of the main aims of this action and AB 380 were to retire water rights from the Newlands Project (Project) and to ensure the perpetuation of Pyramid Lake and to reduce litigation over Project water rights, the tribe should be required to cease water right transfer protests. This is extremely important for those transfers to the LVW for reasons I will elaborate in the following paragraph. Both the State and the State have expended many millions of dollars in an attempt protect the LVW, and it is not reasonable for the Pyramid Lake Tribe (Tribe), who is also receiving millions of taxpayer dollars for water right purchases, to take this action that impacts the viability of the wetland's water-right acquisition program . In 2007, the State and NWA successfully pursued a full-duty water right transfer through the Sate Engineer's Office. The transfer was protested by both the federal government on behalf of the Tribe and by the Tribe. The State and NWA won the transfer case on all points and was granted the full-duty transfer to the wetlands, but the Tribe filed an appeal in District court. So far the District court has not made a ruling on this case.

The amount of water involved in this litigation for a full-duty transfer to the LVW is only 0.51 acre-feet per acre (AF/A), it has significant value to the wetlands and has almost no impact to Pyramid Lake. In terms of real value to the wetlands, the 0.51AF/A calculates to an additional 25 percent additional water. This is because, prior to the transfer of water from irrigated farm lands, the wetlands received more than 1 acre AF/A of return or drain flow. Once the water was transferred to the wetlands, those inflows cease. Under the current transfer to wetlands of 2.99 AF/A, 1 AF/A goes to make up the loss of drain-water inflow, leaving only 1.99 AF/A of additional water to maintain wetland habitats. Consequently, the addition of 0.51 AF/A means that the wetlands would receive 25 percent more actual water once the loss of drain-water is made up. This would not result in any addition water diversions by the Project, since prior to the transfer the fully-duty was being used byf private owners.

There is still a perception that Pyramid Lake is still in jeopardy of significantly declining and putting the cui-ui in danger of extinction. Nothing could be further from the truth. As the attached graph of Pyramid Lake elevations shows, the lake has continued a long-term trend increase since 1964, when concerns for its survival was elevated. In contrast, wetlands in western Nevada have continued to decline. A study was also done by the Bureau that show that if nothing more was done to provide more water to Pyramid Lake that the Lake would continue to rise. The Sefsrvice calculated that between Statehood and the early 1960's that more than 80 percent of the wetlands in western Nevada had been lost. Since that time the losses have continued and during the last 50 years Nevada has not only lost significant un-managed wetlands, but has also lost two State managed wetland areas and one federal National Wildlife Refuge.

It is therefore my request that the EA be amended to make three provisions to the document. The first would stipulate that any active or transferable water rights acquired under this program be transferred to the LVW. That the provision be made, if it hasn't already been done, that non-active water rights acquired by the State or Service for the wetlands be transferred to this program and count toward the 6,500 acre goal. And lastly, that before this program is approved for the benefit of the Tribe and Pyramid Lake, that the Tribe agree to stop all current and future protests of full-duty transfers by the Service, State, or NWA for the benefit of the LVW.

Thank you for you consideration of these comments.

Singerely,

Norman Saake

Norman Saake
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Fallon, NV 89406
775-867-2198
saake@oasisol.com

File Code	ENV-6.00
Project	29
Control No	10044959
Folder ID	1051439-2

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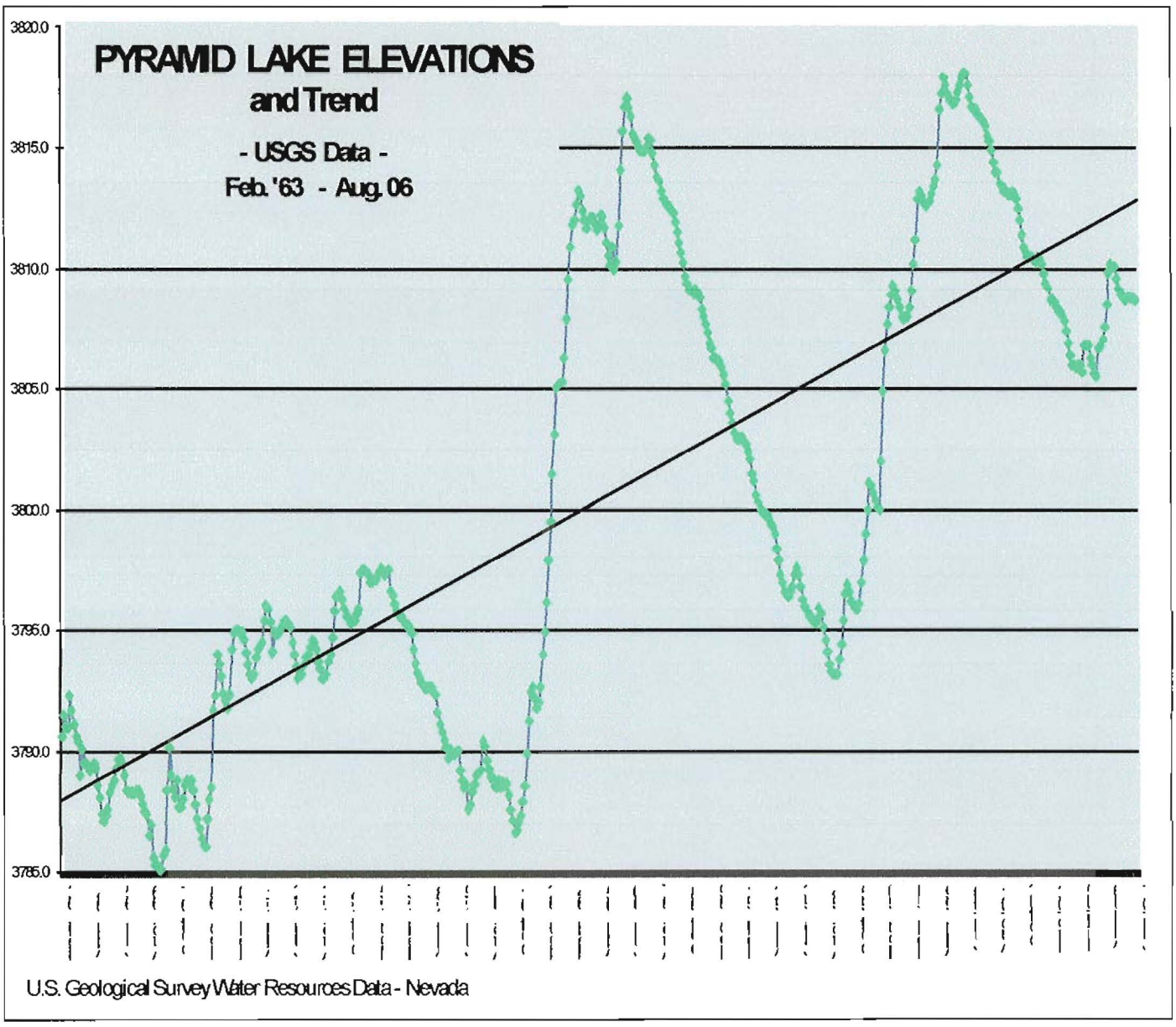
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and Trend
- USGS Data -
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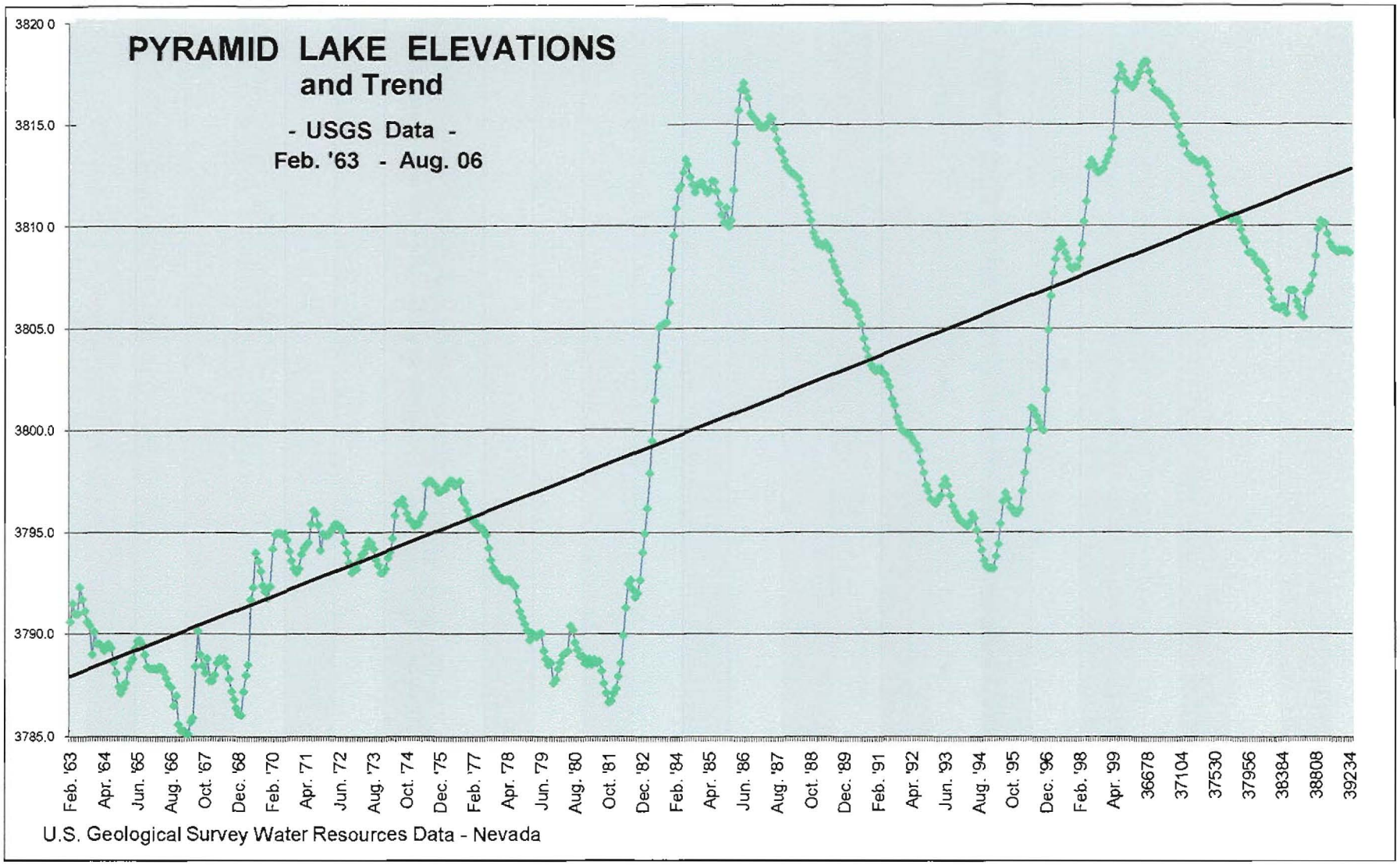
U.S. Geological Survey Water Resources Data - Nevada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- USGS Data -
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U.S. Geological Survey Water Resources Data - Nevada

Comment #3

Toiyabe Chapter
P.O. Box 8096
Reno, NV 89507

CODE	PERSON RESP	INITIAL & DATE
100		
101		
110		
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June 17, 2010

Jane Schmidt
Bureau of Reclamation
705 No. Plaza St. #320
Carson City, NV 89701

Re: draft EA and FONSI for Newlands Project Water Rights Retirement Program (LO-650, ENC-6.00)

Dear Ms. Schmidt,

Thank you for your request for review and comments on the Draft Environmental Assessment and Draft Finding of No Significant Impact for the Newlands Project Water Rights Retirement Program). The Sierra Club has concerns about the proposed action and offers suggestions for inclusion in the final EA and FONSI.

The Sierra Club has been a part of the Lahontan Valley Wetlands Coalition since the late 1980's, sharing its mission of providing water to the wetlands at Stillwater National Wildlife Refuge and Carson Lake. Our volunteers have donated thousands of hours in pursuit of our goal and are appreciative of the progress made by the US Fish and Wildlife Service and the Nevada Department of Wildlife in providing water to Lahontan Valley wetlands.

The authorizing legislation for the water rights retirement program apparently did not differentiate between active and inactive water rights, although this was the original intent of the state legislation, AB 380. BOR's purpose of and need for the proposed action (as stated on pp. 1-2) sets it in direct conflict with federal legislation (PL 101-618) which directed the US Fish and Wildlife Service (USFWS) to acquire water rights for the Lahontan Valley wetlands. Two Department of Interior agencies, the USFWS and the Bureau of Reclamation (BOR), will be competing for the same water in the Newlands Project. The price of limited water could be greatly increased due to competitive bidding between these two federal agencies. We also understand the US Navy is actively purchasing lands and water rights around the Fallon Naval Air Station to secure its mission from encroachment by subdivisions, etc. on the base, thus providing a third federal agency competing for the same limited resource and potentially driving up the cost of available water. This is a most unfortunate situation, as the missions of all three agencies will be undercut by three competing water rights acquisition programs.

We strongly urge the BOR to coordinate with the USFWS and the US Navy to minimize the competition for scarce water rights in the Newlands Project. A cooperative program should be set up, so that the local water market will not benefit from conflicting federal programs.

Thank you for considering our comments.

Sincerely,

Rose Strickland
Toiyabe Chapter of the Sierra Club

File Code	ENV-6.00
Project	29
Control No	10044960
Folder ID	1051439-2

From: Richard_Grimes@fws.gov
Sent: Tuesday, June 22, 2010 5:21 PM
To: Schmidt, Jane C
Cc: Goddard, Mike; Lunderstadt, Carl
Subject: Comments to Draft EA

Jane, thank you for the opportunity to review the "Draft Environmental Assessment for the Newlands Project Water Rights Retirement Program." As we've discussed, in the original AB 380 water rights purchase program, we minimized competition between programs by working informally with the Carson Water Subconservancy District and their contractors. In many cases, we were able to find opportunities within our Lahontan Valley water rights purchase program to share transactions with CWSD.

For example, when we contracted to buy a water-righted tract which included both ineligible and eligible water rights, during the escrow we were able to separate the ineligible water for the AB 380 program and acquire only the water rights eligible for wetlands use. This strategy avoided the perception in the marketplace that we had two competing federal programs for the same property, maximised the water acquired by both programs, minimized acquisition and transaction costs and made sure the property owner received full appraised value for the entire property.

I'd like to see that cooperation encouraged in the new phase of the retirement program, perhaps with a short statement in Chapter 2.2 which describes the proposed action.

I was also pleased to see that a feature of the new program will be to pay the Truckee-Carson Irrigation District a lump-sum for each acre of water rights retired to offset the loss of future operations and maintenance assessments. As the largest water owner in the Newlands Project, and the largest payer of O&M, it's very important to the Fish and Wildlife Service that this payment continue to be made to the district.

The Environmental Assessment looks very good. Thanks again for including us in the comment period.

Richard

Richard Grimes
Supervisory Realty Specialist
Nevada Realty Field Office
U.S. Fish and Wildlife Service
1000 Auction Road
Fallon, NV 89406
(775) 423-5128 x 225 tel
(775) 423-0416 fax

NEWLANDS WATER PROTECTIVE ASSOCIATION, INC.
P. O. BOX 217
WESTLAKE, OREGON 97493-0217
(775) 423-7774
newlands222@msn.com

June 25, 2010

Jane Schmidt
Bureau of Reclamation
705 N. Plaza St., Room 320
Carson City, NV 89701

Re: Comments to Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact for Newlands Project Water Rights Retirement Program (Retirement Program and Fund) (Action by June 25, 2010)

Dear Ms. Schmidt:

The Newlands Water Protective Association, Inc., (NWPA) a Nevada non-profit corporation whose purpose is to protect and defend the water and hydropower rights of the water rights owners of the Newlands Reclamation Project, respectfully submits the following comments to the Draft EA regarding the Newlands Project Water Rights Retirement Program. NWPA served as a contractor to assist the Carson Water Subconservancy District in implementation of the original AB 380 program.

Section 2.2 Proposed Action.

As the entity contracted to assist Great Basin Land and Water (GBLW), the contractor selected to administer the Retirement Program and the Fund for which this EA is written, NWPA is concerned about the accuracy of the description of the Proposed Action under Section 2.2 of the EA, although its concerns and suggested changes would not affect the ultimate goal of the program, that is, the retirement of water right.

As NWPA understands this program, no acquisitions of water rights are contemplated. The program was designed that way to streamline the process based on lessons learned in the AB 380 program. This program has been designed to pay water right owners to voluntarily retire their water rights. At no time would the water rights change ownership. Any water rights retired into the program that remain subject to litigation would be dismissed from that litigation. The irrigation district would be paid the $1,233 per acre offset for lost operation and maintenance revenues.

If NWPA's understanding of the program is accurate, then, the language of Section 2.2 may need to be amended to reflect an accurate description of the program.

Section 3. Affected Environment and Environmental Consequences.

Under Section 3, Affected Environment and Environmental Consequences, found on page 9, and specifically referencing Table 1 found on page 11, footnote 1 explains that the Current Condition as reflected excludes 9,429 water righted acres alleged to be under current litigation. While this was certainly the case at the time of preparation of the EA for the AB 380 program, it is not necessarily true today. All administrative challenges pending against Newlands Project Water Rights change applications have been fully resolved, and by Court Order entered in March of 2008, the Federal District Court dismissed, without prejudice, any petition challenges against individuals who did not acknowledge receipt of service in the case or who own property, even if acknowledgment of receipt had been submitted, that is now under different ownership. While the Pyramid Lake Paiute Tribe of Indians is certainly free to ask the Court to certify the orders in order to pursue interlocutory appeal on the issues, or, in the alternative, to file a new action against the water right owners, they have not yet done so. Until an appeal is filed or another court order to the contrary entered, the ruling stands. The actual current condition, then, according to NWPA calculations, is a total of 221 acres (based on the Tribe's database, 137.33 according to NWPA's database) still remaining challenged by litigation. Certainly far different from the 9,429 acres utilized in the prior EA.

Likewise, footnote 2 on page 11 may need to be changed as well, based upon the 221 acres currently remaining subject to litigation challenge.

Whether these numbers will actually change the modeling results, NWPA does not know. Our primary concern is to ensure accuracy of the EA.

Modeling.

It is unclear to NWPA whether the modeling calculations in this EA were done taking into account the restrictions on diversions placed by the Court as a result of the canal breach. Again, the EA for AB 380 did not contemplate a mandatory operational

restriction that adversely affects the amount of water available to serve remaining water right owners in the project, or the impact to wildlife at the Stillwater Wildlife Refuge and Lahontan Reservoir. Furthermore, NWPA is unsure if the original EA, or the instant document, takes into consideration impacts to the Fallon Naval Air Station and national security.

Additionally, no one contemplated, at the time of the EA for the AB 380 program, that the City of Fernley would be temporarily transferring its water to Pyramid Lake on an annual basis, thus increasing the amount of water delivered to Pyramid Lake by over 6,000 acre feet per year. Has revised modeling using this additional information, that is, the reduction in canal capacity and conversion of previously irrigated water rights to wildlife purposes at Pyramid Lake, been done? Section 3.4.2 Environmental Consequences refers to a finding in the prior EA that the surface elevation at Pyramid Lake would likely increase by 2.1 feet based on circumstances in existence at that time. Modeling current circumstances should, then, result in even greater benefit to Pyramid Lake due to reduced diversions at Derby Dam and increased deliveries to Pyramid Lake.

Finding of No Significant Impact.

NWPA agrees that the retirement of the limited amount of water rights contemplated by the new program as indicated in the EA will not result in significant impact, particularly in light of the fact that the original EA contemplated acquiring 6,500 acres. It should be noted, however, that according to NWPA records, in addition to the AB 380 retirements totaling 4,623.54 acres, 41.19 acres has been declared abandoned or forfeited through settlement negotiations since the end of the AB 380 program, thus bringing the total to 4,664.73 acres that have been voluntarily permanently retired, or have been declared abandoned or forfeited by the Federal District Court. NWPA suggests the actual number be identified and agreed to by all parties prior to the commencement of this program.

General Program Comments.

In the prior EA for the AB 380 program, NWPA went on record as being uncertain that 6,500 acres was an attainable goal, as it was an arbitrary number reached during negotiations of the language of AB 380 and the Joint Testimony Agreement. According

to NWPA records, however, the U. S. Fish and Wildlife Service owns 571.24 acres of water rights that could, with congressionally granted authority, participate in this program. Likewise, the Pyramid Lake Paiute Tribe, has about 48.51 acres it has not converted to environmental purposes and Reno, Sparks and Washoe County has 51.52 acres they have not moved to wildlife purposes. These water rights could also participate in the program. These water rights are just sitting unused. The water is not diverted at Derby but flows down for the benefit of Pyramid Lake anyway. If just these three entities were to participate in this retirement program, the total acreage voluntarily retired or declared abandoned or forfeited could be up to 5,336 rather quickly and easily, leaving just 1,164 acres left to reach the 6,500 acre limit. 1,164 acres just might be do-able.

One last comment. NWPA is concerned that the water right owners who voluntarily participate in the program will not receive the benefit of resolution of alleged assertions of abandonment, forfeiture or lack of perfection made by the Pyramid Lake Paiute Tribe. The result would be a failure to meet the goals as stated on page 1 under Introduction: "to provide an alternative to time-consuming and costly legal or administrative proceedings concerning challenged water rights" since many of those who may desire to participate in the program are not currently subject to litigation but desire to avoid future litigation. This, of course, is not a subject broached by the EA, but one that must be tackled by the administrators of the program during its existence. NWPA is hopeful that administrators of the program will work with the Tribe and others to develop a mechanism to ensure against future litigation challenges to specifically identified water rights and to remove the litigation clouds on title to real property in the Newlands Project.

Conclusion.

Resolution of prolonged water rights litigation in the Newlands Reclamation Project is a commendable goal. NWPA supports all efforts to resolve litigation in a manner that does not adversely affect current accepted water usage by water right owners in the Project. NWPA believes this program, if administered properly, can go a long way toward achieving resolution of the many outstanding issues plaguing not only the water right owners, but the Pyramid Lake Paiute Tribe and other entities as well.

June 25, 2010

Jane Schmidt
U.S. Bureau of Reclamation

Re: Comments to Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact for Newlands Project Water Rights Retirement Program (Retirement Program and Fund) (Action by June 25, 2010)

Thank you for this opportunity to make and submit comment. Should you have any questions or concerns, please do not hesitate to contact us.

Sincerely,

Stuart Richardson, President
Newlands Water Protective Association, Inc.

JIM GIBBONS
Governor

Comment #6

STATE OF NEVADA

LEO DROZDOFF
Acting Director

JASON KING, P.E.
State Engineer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF WATER RESOURCES

901 South Stewart Street, Suite 2002
Carson City, Nevada 89701-5250
(775) 684-2800 • Fax (775) 684-2811
http://water.nv.gov

June 25, 2010

Ms. Jane Schmidt
Bureau of Reclamation
705 N. Plaza Street, Room 320
Carson City, Nevada 89701

Re: Comments concerning the Draft Environmental Documents on the Newlands Project Water Rights Retirement Program

Dear Ms. Schmidt,

Please accept the following as the comments from the Office of the State Engineer, Nevada Division of Water Resources, solicited by the Bureau of Reclamation regarding the ***Draft Environmental Assessment and Finding of No Significant Impact of the Newlands Project Water Rights Retirement Program.***

Comments:

1. Information identifying those acreages that participate in the Water Rights Retirement Program (Program) should be periodically made available to all concerned entities, including the Nevada Division of Water Resources. The information is necessary for proper processing of APPLICATIONS FOR PERMISSION TO CHANGE POINT OF DIVERSION, MANNER AND PLACE OF USE OF THE PUBLIC WATERS OF THE STATE OF NEVADA HERETOFORE APPROPRIATED filed with the State Engineer. At the conclusion of the Program, a complete dataset of the retired acreage should be made available in both tabular and Geographic Information Systems (GIS) format.

2. **NRS 533.325 Application to State Engineer for permit.** Any person who wishes to appropriate any of the public waters, or to change the place of diversion, manner of use or place of use of water already appropriated, shall, before performing any work in connection with such appropriation, change in place of diversion or change in manner or place of use, apply to the State Engineer for a permit to do so.

Thank you for the notification and the opportunity to present these comments. Should you have any questions regarding this issue, please contact me at your convenience. I may be reached by telephone at (775) 684-2856, or by e-mail at mdillon@water.nv.gov.

Sincerely,

Matthew Dillon
Staff Engineer

ARTHUR E . MALLORY
DISTRICT ATTORNEY

Fallon (775) 423-6561
Fax (775) 423-6528
E-mail: amallory@churchillda.org

OFFICE OF THE DISTRICT ATTORNEY
OF CHURCHILL COUNTY

25 June, 2010

Kenneth Parr
Lahontan Basin Area Manager
U.S. Bureau of Reclamation
705 N. Plaza Street, Room 320
Carson City, NV 89701

Re: *Draft Environmental Assessment and Draft Finding of No Significant Impact for Newlands Project Water Rights Retirement Program (Action by June 25, 2010)*

Dear Kenneth:

On behalf of Churchill County, Nevada we are in receipt of the letter dated June 10, 2010 regarding the Environmental Assessment and Draft Findings of No Significant Impact for Newlands Project Water Rights Retirement Program. The date of action for this matter is June 25, 2010. Owing to the short period of time in which to prepare, we hereby respectfully request an addition fourteen (14) days to submit comments as pertaining to the above captioned matter.

Please contact our office with any questions or comments.

Sincerely,
ARTHUR E. MALLORY
District Attorney

By:
Rusty D. Jardine
Deputy District Attorney

RDJ/dlf

Truckee-Carson Irrigation District

Newlands Project

June 25, 2010

Jane Schmidt
Bureau of Reclamation
705 N. Plaza St., Room 320
Carson City, NV 89701

Subject: Comments to Draft EA

Dear Ms. Schmidt,

Thank you for including TCID in the comment period. The 15 day period is very short and consequently our lawyers don't have time to develop a constructive comment. The 15 day period also falls between our normal Board meetings so that I could not agendize the EA or the comments for the Board. I would ask if you could extend the comment period for another 15 days that would be ample time. In any case I would like to express my concerns with the EA.

As stated, the AB 380 program was developed to resolve the litigations involved with the surface water rights in the Newlands Project. I believe that was a good resolution and one would hope that with the Project Water Rights Retirement Program that would be the outcome as well. However, in reading the Draft EA it is clear that The Tribe does not share that thought.

The Tribe has already reactivated petition cases and is seeking the forfeiture of challenged water rights. It concerns me that The Tribe will now have access to $10 million to purchase water rights challenged or not over and above the 6,500 acres. The Tribe has made it clear that they want no water to be diverted to the Carson Division from the Truckee Canal and I believe that they will stop at nothing to reach that goal. This $13 million is more than the original amount set aside for the 6,500 acres by twice as much. This is a real and legitimate concern for the water right owners in the Carson Division.

2666 Harrigan Road, P.O. Box 1356, Fallon, Nevada 89407-1356
Phone: (775) 423-2141 FAX: (775) 423-5354

The draft EA is concise, but it does not address cumulative impacts of retiring over 3000 acres of water rights on the water supply in the Lahontan Valley. It does not address potential impacts of loss of drain water for the wildlife refuges, nor does it address the impact on the community drinking water supply. I believe the funds are there to open the door for additional environmental and community impacts. Those are my comments but I know our lawyers would like the extra time to respond as well.

Sincerely,

Kathryn Rutan
Acting Project Manager
Truckee-Carson Irrigation District

JIM GIBBONS
Governor

STATE OF NEVADA

ANDREW K. CLINGER
Director

DEPARTMENT OF ADMINISTRATION
209 E. Musser Street, Room 200
Carson City, Nevada 89701-4298
(775) 684-0222
Fax (775) 684-0260
http://www.budget.state.nv.us/

June 28, 2010

Jane Schmidt
US Department of the Interior
Bureau of Reclamation
Lahonton Basin Area Office
705 N. Plaza
Room 320
Carson City, NV 89701-4015

Re: SAI NV # **E2010-226** Reference:

Project: **Newlands Project water rights retirement program, Truckee-Carson River basins**

Dear Jane Schmidt:

The State Clearinghouse has processed the proposal and has no comment.

This constitutes the State Clearinghouse review of this proposal as per Executive Order 12372. If you have questions, please contact me at (775) 684-0213.

Sincerely,

R. Tietje
Nevada State Clearinghouse

Comment #10

MICHAEL J. VAN ZANDT
PARTNER
DIRECT DIAL 415 995 5001
DIRECT FAX 415 995 3566
E-MAIL mvanzandt@hansonbridgett.com

HansonBridgett

July 9, 2010

VIA ELECTRONIC MAIL
JCSCHMIDT@USBR.GOV

Ms. Jane Schmidt
Bureau of Reclamation
705 N. Plaza St., Room 320
Carson City, Nevada 89701

Re: Draft Environmental Assessment and Draft Finding of No Significant Impact for Newlands Project Water Rights Retirement Program

Dear Ms. Schmidt:

On behalf of the Truckee-Carson Irrigation District, I am submitting comments on the subject documents. TCID believes that because the EA encompasses not only the $3,000,000 for acquisition of water rights, but also an additional $10,000,000 for acquisition of water rights, that the EA and the FONSI understate the potential effects of the proposed action. The EA fails to take a "hard look" at the potential impacts from this program on the affected environment. TCID believes that the cumulative effects of the proposal will have a significant adverse effect on the environment and that a full environmental impact statement is required.

AB 380 Environmental Assessment (2000)

The current EA attempts to incorporate by reference the year 2000 EA that was accomplished on the original AB 380 program. The analysis in the AB 380 EA was based on data that was out of date at the time and is now over ten years older. Moreover, there has been sufficient time passed to allow for the BOR to analyze the impacts of the AB 380 program on the environment, including on Fernley and the Lahontan Valley by updating the information analyzed in the AB 380 EA. In other words, the BOR should use more recent data on the environmental setting to determine if the original acquisition program, along with all the other acquisition programs has caused any environmental impacts in the study area. The use of the old data masks the potential exacerbating effect on the environment from the new acquisition program, which theoretically could reduce the number of irrigated acres in the Newlands Project by over 3000 acres.

The AB 380 EA also uses the Truckee River Operating Model (TROM) for its analysis of water deliveries to Pyramid lake and the Newlands Project. The TROM has long been recognized by the BOR to be outdated and inadequately documented. The TROM has been described by various modelers form the USGS and elsewhere as a lacking any valid scientific basis and fatally flawed for its use as an evaluation tool. See Written Testimony of Willem Schreuder, Ph.D., Principia Mathematica, June 29, 2010. Attachment 1. Therefore, use of the TROM for an analysis of the impacts of the new acquisition program are likewise fatally flawed.

The AB 380 EA also states that it will analyze the potential impacts of the proposed Truckee River Operating Agreement (TROA) on the AB 380 program, but then concludes that the TROA is not yet finalized and therefore its impacts are unknown. The current EA purports to analyze the cumulative impacts from TROA, but merely makes a conclusory statement that the cumulative effects from TROA "is expected to result in potential effects of relatively small magnitude." There is no analysis associated with the TROA comment and not even an indication as to which environmental resources were evaluated for impacts. Given the fact that it is anticipated that TROA will cause shortages in the Newlands Project due to the management of Truckee River water in upstream reservoirs, and the fact that this proposal will further reduce irrigated acreage in the Newlands Project, it is unsupported in the EA as to cumulative impacts from TROA on water supply, groundwater recharge, air quality, and water quality. Further, there will be additional significant impacts on the Stillwater National Wildlife Refuge and the Carson Lake Refuge through the reduction in water deliveries and an attendant reduction in drain water that benefits these areas and their wildlife.

Draft Environmental Assessment for Newlands Project Water Rights Retirement Program

1. Scope

The Draft EA purports to analyze the acquisition of $3,000,000 worth of additional water righted acres in the Newlands Project without attempting to quantify how many acres are at stake. At $4000 per acre, an average value for the Newlands Project, the proposed program could acquire up to 750 acres of additional land. This equates to 2625 acre feet at 3.5 acre feet per acre or 3375 acre feet at 4.5 acre feet per acre. Suffice it to say that the total amount of acre feet will most likely surpass 3000 acre feet. However, the EA also purports to analyze the potential impacts from an additional $10,000,000 acquisition program.[1] The EA does not attempt to quantify how many acres this would impact. However, using the $4000 figure, another 2500 acres of water righted land could be retired under the program. This amounts to 11,250 acre feet at 4.5 acre feet per acre and 8,750 acre feet at 3.5 acre feet per acre. The EA does not calculate these numbers but leaves it to speculation as to the actual numbers.

If one adds the two programs together, 3250 acres of land could be retired as a result of this proposal. This amounts to more than five percent of the irrigated lands in the Newlands Project each year. When combined with the more than 5000 acres already retired through various programs, the total impact on the Project exceeds fourteen percent of the irrigated lands. This percentage of lands being retired amounts to over 30,000 acre feet of delivered water each year in the Project. There is no analysis of these numbers in the EA and no attempt to give either the public or the decision maker an idea of the magnitude of the potential size of the reduction. Thus, the EA tends to understate the potential environmental impacts from the proposed action because it fails to quantify the true magnitude of the acreage retirement program.

[1] The EA purports to limit the total number of acres to 6500; however, given the availability of the $10,000,000, the lack of any limitation in the authorizing legislation, and the motivation of the Pyramid Lake Tribe to retire the maximum number of acres, there is no guarantee that the 6500 number will not be exceeded.

2. Alternatives

A. No Action

The EA assumes that the Tribe will be successful in retiring 60 percent of the lands that it has challenged in the Tribe's Petition cases. The success rate for the Tribe in the companion Transfer cases was much less than 60 percent. Moreover, the Federal District Court in Reno has dismissed all but about 60 of the petitions that Tribe originally filed in 1993. The Tribe disobeyed the Court's order to personally serve some 1700 water right owners in the original Petition action, failed to file a lis pendens and prejudiced a number of water right owners who have already reconveyed their water rights to other persons or entities. The lack of service and notice to the water right owners was deemed to be a due process violation by the Tribe and all but about 60 of the petitions have been dismissed. The court now lacks jurisdiction over these water rights for purposes of the Tribe's claims. The Tribe has not appealed this ruling. Thus, the EA overstates the risk of the Tribe pursuing its actions and the purported justification for the proposed action.

B. Proposed Action

As noted above, the proposed action does not include any quantification of the numbers of acres that could be retired through the $13,000,000 acquisition program, nor does it attempt to quantify the total amount of water that will not be delivered or diverted to the Newlands project as a result of the proposal. Thus, neither the public nor the decision maker are sufficiently informed of the magnitude of the proposal to make any informed decisions or informed comments.

3. Affected Environment and Environmental Consequences

A. Background

The EA incorporates by reference the year 2000 AB 380 EA. Not only has ten years passed since this EA was prepared, but even the 2000 AB 380 EA used outdated material. Most notably, the AB 380 EA used the TROM, which has been severely criticized by the USGS and the independent consultants hired by the BOR. The BOR is obligate to use the best available science in conducting its evaluations. The TROM is fatally flawed according to the USGS; therefore, it cannot be the basis of any analysis of water resource impacts for this proposal. it also appears from Table 1 of the EA that the Proposed Action will reduce the number of adult female Cui-ui from 605,700 to 392,200. That much of a take clearly violates the Endangered Species Act.

Moreover, the EA fails to acknowledge active water rights appropriations by the BOR and TCID. The BOR is currently asking for an additional 120,000 acre feet of water from the Truckee River watershed. TCID has an outstanding application for 100,000 acre feet from the Truckee River with a priority of 1930. The EA fails to address these applications and their potential impact on the Truckee River water supply.

B. Wildlife and Endangered, Threatened, Candidate Species

The EA makes modifications to several species status; however, it does not give an update on any of the species in Pyramid Lake, specifically the Cui-ui and the Lahontan Cutthroat Trout. these are the species of interest that are driving the acquisition program. Since it has been ten years since the original EA, the BOR and the U.S. Fish and Wildlife Service must have some information on the continuing viability of these species and how the additional water will affect them. The EA continues to use outdated data and this misrepresents the status of the species and the impact of the prior acquisition programs.

The EA purports to conclude that there will be benefits form the program on Pyramid Lake without providing any actual data. What. for example, is the correlation between inflows to Pyramid Lake from the proposed action and increases in the fish population. Are the rewards of the program outweighed by potential impacts to the population of people in the Newlands Project? Will the affected environment be impacted if only a small fraction of the water rights are acquired? What trends are there in the sustainability of Pyramid Lake, given its status as a terminal desert lake?

C. Newlands Project

TCID is most concerned about the potential impact of the proposed action on the Newlands Project. The potential reduction of water supplies to the Project has a dramatic and immediate impact on the surrounding environment. Here are some examples.

As water rights are acquired and land is dried up, there are created more and more areas that lack vegetation in the Project. Not only is valuable soil washed away and blown away, but the soil particles become airborne and create dust bowls and dust clouds. The AB 380 EA concludes that the particulate loading meets air quality criteria; however, particulate standards have been modified since 2000 and the EA fails to state what the new standards are and whether the area is in compliance. Moreover, the EA fails to quantify the additional loading of 3250 new barren acres on air quality. The EA fails to take a hard look at this issue.

Given all the land that have had their water rights retired, the EA fails to evaluate or even mention the aesthetic impacts on the environment. The area immediately to the west of the Stillwater national Wildlife Refuge was a continuous greenbelt oasis of alfalfa field, and in the case of the Canvasback Duck Club. of marshes and wildfowl habitat. Now those lands are being dried up. Not only does the reduction in water righted acreage affect the irrigated lands, but it also affects the amount of drain water that reaches the marshes around Carson lake, Stillwater Refuge and the Canvasback Club. There is an attendant impact on wildfowl and wetlands that the EA fails completely to address. This proposed action is exacerbating an environmental disaster on the eastern side of the Newlands Project. There is no analysis of the impacts on the aesthetics of the valley, and even more alarming, no analysis of the impacts on wetlands and wildfowl.

Besides the impact on air quality, the EA fails to analyze impacts on groundwater supply. The City of Fernley is experiencing reductions in its groundwater supply that feeds its wells for domestic water production. There is no doubt that the groundwater recharge in the Fernley

area is directly related to the amount of water that is placed in irrigation in the Truckee Division. the EA fails to evaluate this issue, or even to discuss the groundwater recharge situation.

Likewise, in the Lahontan Valley, the vast majority of citizens rely on shallow wells for their water supply. Many of these wells are less than 100 feet in depth. These people rely on the shallow aquifer for their domestic supply of water. This aquifer is recharged almost exclusively from irrigation waters applied to crops. The cumulative impact of withdrawing over 40,000 acre feet on an annual basis from the valley and the aquifer is not even mentioned let alone analyzed in the EA. The EA fails to take a hard look at these issues. without an adequate water supply, housing in the Fernley and Fallon areas cannot expand. This will have an adverse impact on industry and domestic uses and may slow of prevent growth in the communities.

D. Cumulative Impacts

Besides the failures noted above, the EA fails to address any issues regarding increased Green House Gasses, Global Warming, or Climate Change due to the reduction in the amount of water delivered to the Newlands Project.

The EA purports to dismiss the TROA in its cumulative impacts analysis. However, the TROA, if implemented, will cause additional shortages in the project. In some years these shortages could exceed 30,000 acre feet. Add to this the 40,000 acre feet of additional acquisitions and you have over 70,000 acre feet of water being removed from the system. No impact analysis of this reduction has been accomplished. The EA tries to mask these impacts by claiming they are speculative; however, there is an existing EIS for TROA that reveals the shortages. There is no analysis except some scanty conclusions regarding cumulative impacts from TROA.

The conversion of agriculture lands to urban uses has slowed considerably in recent years. The acquisition program will put pressure on farmers to sell water rights but there will be no conversion to urban uses. The result will be vacant land that will be part of the growing dust bowl, with the attendant impacts on air quality and aesthetics.

The Recoupment lawsuit is mentioned as a potential cumulative impact if more water is taken from the Newlands Project. The current status of the lawsuit is that it is on appeal, and the case has not been reactivated in the federal district court. Nonetheless, there is no analysis of the worst case if the total amount of water the United States expects to recoup must be repaid over time. This can be quantified by the government and analyzed as cumulative impacts on shortages caused to the project. The EA fails to analyze this issue at all.

4. Conclusion

The EA fails to take a hard look at all of the issues discussed above. For these reasons, the EA is defective and has masked the true impacts. The FONSI and the EA are defective and the BOR should prepare an environmental impact statement for this proposed action.

TCID wishes to be copied on the final EA and FONSI as well as this law firm.

Sincerely,

Michael J. Van Zandt

Enclosure

cc: TCID

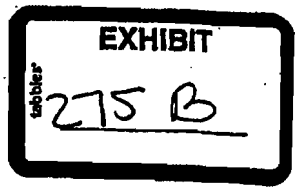
California State Water Resources Control Board (SWRCB)

Expert Report

Public Hearing: Water Right Applications 31487 and 31488 filed by the United States Bureau of Reclamation and Petitions to Change License 3723 (Application 5169) of Washoe County Water Conservation District, License 4196 (Application 9247) of Truckee Meadows Water Authority, and Permit 11605 (Application 15673) and License 10180 (Application 18006) of the United States Bureau of Reclamation Truckee River Watershed

Willem A. Schreüder
Principia Mathematica

June 2010



Expert Report of
Willem A. Schreüder

Regarding Public Hearing: Water Right Applications 31487 and 31488 filed by the United States Bureau of Reclamation and Petitions to Change License 3723 (Application 5169) of Washoe County Water Conservation District, License 4196 (Application 9247) of Truckee Meadows Water Authority, and Permit 11605 (Application 15673) and License 10180 (Application 18006) of the United States Bureau of Reclamation Truckee River Watershed

Dr. Willem A. Schreüder

June 2010

Introduction

This expert report describes the review and evaluation of the Truckee River Operating Agreement (TROA) model used in preparing the TROA Draft & Final Environmental Impact Statement/Environmental Impact Reports(EIS/EIR). On behalf of the Truckee-Carson Irrigation District, Churchill County and the City of Fallon, Principia hereby submits its expert report regarding the TROA model upon which the EIS/EIR rests.

TROA Model Overview

A review of the mathematical model upon which the TROA Draft & Final EIS/EIR centrally rests was conducted by Principia. This review was originally conducted in 2004 based upon the draft TROA EIS/EIR (1998), with comments submitted in December 2004. Responses by the U.S. Bureau of Reclamation (BOR) to address these comments in the Final TROA EIS/EIR (2008; SWRCB-7) failed to adequately address the original concerns raised in 2004. Thus, comments and concerns originally stated in December of 2004 remain valid. The review revealed three major facts that call into serious question the fundamental underpinning of the EIS/EIR. These three facts are presented as follows.

(1) The model upon which the EIS/EIR rests so heavily is unreliable in critical respects. In any unbiased scientific review by qualified peers, this model would be rejected for the very uses that are reported in the Draft & Final EIS/EIR.

(2) The model's unreliability is caused by significant, serious and, in some instances, fatal flaws. Such flaws prevent the model from being applied properly to evaluate "what-if" scenarios intended to establish suitable alternatives to or adjustments of planned water allocations.

(3) Employing a fatally flawed model to plan water allocations and to make decisions that would continue well into the future, when other well-tested and reliable stream flow models are readily available for use, introduces scientific unreliability into the TROA process. It leads inevitably to unsupportable management decisions that may be adopted as a regulation and thereby create unintended and seriously flawed consequences.

These facts lead Principia to urge that the model, in its present form, be rejected for use as the foundation for the EIS/EIR. The flaws identified by Principia are summarized below. This summary and associated opinions provide some indication that such assumptions and rules as embedded in the TROA are seriously flawed.

Crippling Flaws in the Model

The specific flaws in the model revealed by Principia's review are identified below. This identification should be viewed as illustrative examples of numerous such flaws that exist and not a comprehensive list of such flaws.

Opinion 1: It is virtually impossible for any independent and unbiased reviewer to follow the steps the model program does take, evaluate values embedded as facts into it, and test the logic to evaluate whether the program computations are indeed being performed as intended, and as reported.

The computer program embodying the TROA model consists of more than 72,000 lines of convoluted FORTRAN language contained in 173 subroutines. The sparse comments contained among these lines do not illuminate, amongst other facts, the innumerable quantities that are assigned unexplained values. Such values furthermore are inexplicably altered as the program instruction courses through the many subroutines of the program. This is very poor and antiquated programming practice that could not be further away from current accepted scientific methodology. What makes this practice untenable in this instance is that not even a rudimentary documentation seems available for the program. Similar efforts by Robertson Software, Inc. and Bill Sikonia of the U.S. Geological Survey (USGS) to document and rationalize the model arrived at these very same conclusions. In a letter dated November 12, 1996, from David Robertson to Mr. Bill Bettenberg (TCID-159), Robertson states the following: "The model is hopelessly complex for anyone to understand. This stems from multiple causes: It is accretionary in that code has been added and added with no attempt to root out obsolete portions or consolidate similar functions. This, coupled with the lack of a crisp overall strategy, antique coding practices, and dubious shortcuts, makes it impossible to defend...." In a similar fashion, Bill Sikonia makes the following statement in a memorandum dated July 26, 1996 (TCID-152): "For a model of this size, one would have to exert considerable control over coding modifications so that the code remained manageable and understandable. However, the model development did not adhere to good coding practices that would ensure this outcome. (MODFLOW, under the influence of Arlan Harbaugh, is a good example of how to do this right)." Kenn Cartier, who worked with David Robertson came to a similar conclusion in his November 12, 1996 memorandum to Mr. William Bettenberg (TCID-159): "Based on my experience, the TROA model is such a patchwork of assumptions, physical and political simplifications, and convoluted code that it is difficult to say what the output results might represent or whether they approach a realistic representation of the water system."

Opinion 2: The computer program embodying the TROA model has not been provided with adequate output generating features to fully understand its calculations.

The flaw discussed in Opinion 1 is compounded further by the fact that the computer program embodying the TROA model has not been provided with adequate output generating features. Such features would at least allow an independent reviewer to evaluate details of water volumes and flow quantities that the program purports to allocate. For instance, the program claims to track water flow quantities throughout the TROA system, but can produce computed output only for a few selected flows at selected locations. These selections of course were made by the program author and do not reflect the quantities and locations that remain of deep interest to the affected public. In order to evaluate just what the program computes in these matters of interest, an independent reviewer is forced to modify the program code in order to obtain output that is clearly contained in the program but is otherwise unattainable. This tedious and cumbersome task is made unnecessarily difficult by the absence of program documentation.

Opinion 3: The accounting of relevant flow quantities is seriously inadequate in the program.

In this program, flow quantities associated with different sources are lumped together, but thereafter the program is not equipped to track each flow quantity according to its source. It is not possible to evaluate whether, or not, this poor programming practice was intentionally adopted. However, it denies any independent reviewer the basic tools needed to understand just why certain results are predicted by this program. This is a serious programming deficiency which makes it impossible to establish just which specific planned action leads to what computed outcome; just the types of basic information essential to manage the TROA system. It is for this very reason that other well-tested and reliable programs such as **Riverware®** are intentionally equipped to keep rigorous track of flow quantities by their "accounts". The 1990 USGS review reached a similar conclusion when they stated, "They do not account for travel time through the system or account for evapotranspiration and ground-water/surface-water interactions in other than a gross statistical manner." (TCID-137)

Opinion 4: The computer program embodying the TROA model employs antiquated FORTRAN-programming practices and modeling techniques.

The ready availability of modern computer models for river systems makes the continued use of the TROA model suspect. The serious consequences stemming from using an outdated model can neither be easily detected nor readily rectified. Consider an example specific to TROA: each planned action taken on the water system is coded within a program subroutine that is found to have complex, undocumented, and sometimes unexpected interactions with different parts of the program that represent other segments of the flow system. It is thus made impossible for any independent reviewer to evaluate whether, or not these interactions were intentional, and if so why, or merely accidental stemming from the manner in which the program has evolved during the past two decades. In direct contrast, modern modeling programs such as **Riverware®** are designed to isolate actions specific to certain "objects," enabling a user to keep track of intended actions. Further, such programs employ component flow models with relevant physical realism and accounting procedures that keep rigorous track of flow quantities propagating through the system. In reliable programs, complex management decisions may indeed be specified by prescribing "rules"; however, the programming of these rules leaves no room for unintended and thus hidden side effects. Furthermore, the use of generic "objects" in reliable programs simplifies the tasks of program validation and documentation, and makes them transparent. In an August 5, 1996 memorandum from Bill Greer (U.S. BOR), Mr. Greer arrived at very similar conclusions (TCID-154): "In many places the code is extremely convoluted, making it difficult to tell where or how or under what conditions a particular calculation is made; many calculated quantities are constrained by a number of upper and/or lower limits, some of which appear either superfluous or irrelevant; some switches, which prescribe the path the computer follows through the code, are undefined or incompletely defined, so that the conditions under which a particular path is followed are unclear; some portions of the code are apparently never used, but nevertheless remain in place; many temporary variables are assigned names which have no connection with what they represent; in many cases, the same temporary variable name is used over and over within a subroutine to represent different quantities; and in a number of subroutines, hydrologic quantities are calculated using coefficients or factors which, apparently, are not explained or justified anywhere." In David Robertson's November 12, 1996 letter to Bill Bettenberg (TCID-159), he supports this conclusion when he states, "I do think it is perfectly OK to bemoan the

'60s style of the program, its lack of comments, and general inpenetratability."

Flaws in Demonstrating the Model's Validity

Opinion 5: The TROA model has not been calibrated to known conditions in the flow system.

For a mathematical model to be considered valid for application to any physical setting, it is essential to demonstrate that the parameters representing physical properties in it are appropriate to this very setting. For surface water models, such parameters include rates of evaporation, seepage from stream segments and other losses, transit times and return flow delays, among others. The validity and appropriateness of model calibration is typically demonstrated by comparison of quantities predicted by the model against observations as its parameter values are adjusted. In the present instance, it is claimed that some values prescribed as input data to the model, such as the Farad to Derby Dam net change, are based upon some previous (and undocumented) modeling effort. It is further claimed that individual terms such as evaporative losses from reservoirs are based upon observations, that are also unidentified. However, no attempt has apparently been made to check that when all of these estimated quantities are combined in this model, model predictions indeed match physical observations of any recorded stream flow values or similar recorded quantities. A 1990 USGS review of the Bureau of Reclamation model and the Negotiation model made the following conclusion: "Because the models are uncalibrated and lack documentation, conclusions drawn from model simulations contain an unknown degree of uncertainty." (TCID-137). Further in the report, the authors state, "Because of the lack of documentation and the lack of calibration of the models, it is impossible to assess the accuracy of the models." (TCID-137).

Opinion 6: It is a significant flaw that the TROA model is entirely based upon the central premise that available water resources and stream flows will, in future, remain at precisely their historically recorded values.

No attempt seems to have been made to estimate, through appropriate stochastic simulations, the future variations in such quantities which will have significant quantitative consequences upon water planning and allocations. No such variations, which accepted scientific methodology would indicate as real possibilities, were apparently tested for purposes of such planning and allocations which this TROA model was apparently designed to quantify. This flaw is exacerbated by the reliance on long term averages to evaluate the effect of various alternatives, instead of a more detailed evaluation of impacts at a time scale that are relevant to water users.

Opinion 7: The calculation sequences embedded into the TROA model have not been demonstrated to be valid.

When a model program is constructed in support of just one project, it is necessary to demonstrate that the model program operates correctly as intended. This is achieved by running the model with a set of input data for which the output results are known, such as from an analytical solution to even a theoretical stream flow problem. This step is usually referred to as model or program validation. In the present instance, while it is claimed that a mass balance was performed on some reservoirs to "ensure that input minus output equals change in storage," even such a basic calculation has not been undertaken for the TROA system as a whole. This flaw

thus makes it possible for water to be either lost or created in the system simply due to artifacts of mis-programmed complex calculations, because no checks were performed to ensure that the model maintains a valid overall mass balance. In David Robertson's November 12, 1996 letter to Bill Bettenberg (TCID-159), he concludes, "Apparently very minor differences in calculation order give very slight differences in results, which then propagate to major differences in other parts of the run."

Opinion 8: The TROA model has not been verified following its calibration.

In generally accepted modeling practice, it is customary to retain some data not used in making calibration adjustments to evaluate just how well the model predictions compare with such data. This step is frequently achieved by calibrating a model using data collected during some selected time period, and then verifying it with data available to represent a different time period. This is a step that tests the robustness of physical representations embedded in the model in their ability to predict values that have been observed for this period, and which have not been consumed during model calibrations. The serious flaw in the TROA model is that no such verification was even attempted.

Opinion 9: Sensitivity runs have not been conducted with the TROA model to establish just how its predicted results vary when unknown parameter values are adjusted each within its reasonable bounds of variability.

It is reasonable to hypothesize that future water availability and stream flow conditions will vary if the past millennia of recorded history of natural phenomena are any guide. It is thus important to test the variability of the model predictions to reasonable variations in physical parameter values. Well known and accepted scientific methodology requires that such sensitivity analyses be undertaken in any modeling effort. This step becomes particularly important when predicted impacts of implementing water allocation plans are anticipated to be small, in order to determine if predicted changes are significant. In the present instance, numerous examples exist wherein conducting such sensitivity analysis would be appropriate. For example, when it is assumed that future changes in water use would occur, it is appropriate to test the sensitivity of the model to different amounts of such changes in order to evaluate the sensitivity of the model predictions to that parameter value, all other conditions being held the same. The serious flaw in the TROA model is that no such sensitivity analysis was performed. David Robertson alluded to this issue in his November 12, 1996 letter to Mr. Bill Bettenberg (TCID-159) when he stated the following: "Our work showed various sensitivity problems where tiny differences caused substantial differences in paths through the code."

Opinion 10: Given the complexity of this model, the absence of a user's manual or guide which explains the syntax, meaning and function of input data sets supplied to the model makes it virtually impossible for any independent reviewer to evaluate the model's uses and thereby verify its validity.

Not even a basic User's Manual or Program User's Guide has been prepared for the TROA model. Such a lack of basic documentation is unprecedented and represents a serious flaw. Under present circumstances it is difficult to establish just how a valid scientific methodology can be followed to allow a proper peer review of the model can be performed. Robertson Software, Inc. and Bill Sikonia of the USGS were contracted in 1994 to provide just such documentation and quality assurance regarding the model in question (TCID-138). Following

some two plus years of effort to complete this task, both Robertson Software, Inc. and Bill Sikonia concluded that this was an impossible task. In a letter from David Robertson to Mr. Bill Bettenberg dated November 12, 1996 (TCID-159), Robertson makes the following statement: "Kenn Cartier and I spent a couple of years in a vain attempt to document and rationalize the model. It was one of the more frustrating endeavors of my long software career."

Flaws in Model Applications

Opinion 11: This model is unreasonably sensitive to the computer architecture and FORTRAN compiler used to convert the source code to an executable form.

In order for members of the affected public to apply the TROA model for any valid purpose, the computer program embodying it has to be installed in a computer prior to running it. Principia's test runs demonstrated that this model is unreasonably sensitive to the computer architecture and the specific FORTRAN compiler used to convert the source code to an executable form. In other words, when used on different types of computers or with different FORTRAN compilers, the TROA model predicts quantitatively different results. This is also unprecedented and represents a serious flaw in the TROA model. Such differences indicate either the use of dangerously poor programming practices or the inherently chaotic behavior of the flow system as modeled, or some combinations of both. The differences in results predicted by the model for identical input data sets are particularly significant and troubling since no model sensitivity runs were performed. Discussions held by Principia with authors of this model reveal that the authors themselves had not studied this behavior but were not even surprised by such differences in results. In this TROA flow system as modeled even one extra drop of water can trigger a sequence of program "decisions" which drastically alter how the system is predicted to operate. This serious flaw in applying the model is dramatically demonstrated by the significant changes in model predicted results for some months, even when using identical data sets, simply by running the program on two different computer systems.

Opinion 12: Results predicted by the TROA model cannot be checked or verified as valid real-life possibilities.

One of the reasons cited by authors of this model for not having undertaken model calibrations is that the model is known not to predict any flow quantities that can actually be compared to observed values. This is also unprecedented especially for a model intended to reflect water allocation plans that will affect so many and for so long into the future if adopted. For example, the flow system may historically have been operated according to "rules" that differ from their present form. When used to simulate such historical conditions, the TROA model would cause this flow system to operate not according to such historical rules but differently when applied to the same time period. This failure violates the most basic principles of science that are recognized and widely accepted as valid methodology. It is essential to demonstrate that it is not only possible to undertake such comparisons but that important model results indeed compare favorably with actual observations, even just for selected periods. Without the basic ability to subject the TROA model to valid controlled scientific experiments and to compare the resulting model predictions with observed data, the affected public is forced to accept this model as an article of faith based only upon representations by its authors, and without any opportunity to review its basis in science which is the normal practice. Bill Sikonia encountered similar problems when trying to provide documentation and quality assurance regarding the model. In a

July 26, 1996 memorandum (TCID-152), Mr. Sikonia arrived at the following conclusion: "It is extremely difficult to separate whether operations are simply personal estimates (usually with little justification) on processes and constants, or whether the choices are actually based or rational analysis or dictated by court cases. The model has almost no internal documentation, describing the model's operation, the reasoning behind choices, the flow of logic, or anything else."

Opinion 13: The TROA model makes predictions that are driven by the results expected by parties to water allocation plans.

This model has been so constructed that it fails to consider changes to gains and losses in the flow system as a result of planned changes in operations. Specifically, the TROA as implemented in the model is aimed at finding unappropriated water, storing that water, and then releasing the water when it is deemed beneficial. What the model as constructed fails to account for is the real possibility that at the time of water releases, water may not reach the lower end of the system as a result of increased losses. Therefore, the increased benefit of such releases may not materialize, may be diminished or even cause additional impact to downstream users who may be "charged" the additional transit losses. Consequently, the model will always predict a benefit from the TROA operations whereas in reality the real benefit would be much smaller and the impact on other water users much greater than predicted. This is also a serious flaw of the TROA model and greatly diminishes its validity as a tool for evaluating real changes in water allocations. Bill Sikonia of the USGS came to a similar conclusion near the end of his review work. In a November 14, 1996 memorandum (TCID-160), Mr Sikonia makes the following statement: "On yet another matter, what the Negotiation Model represents, I think, is a political document, not a scientific one. It's telling the principles, namely the Feds, Sierra Pacific, and the Pyramid Lake Paiute Tribe what they want to hear. Any time this was not true, the model was examined to see if the "problem" could be "fixed." No more clear example of this phenomenon occurred than a couple of months ago when the model said, during Environmental Impact Statement runs, that the cui-ui were better off without the Truckee River Operating Agreement (TROA) than with it. Rod Hall went into the model and found the "problem" and – surprise – now the cui-ui do better under TROA. I suspect this happened a lot. Any time the results were not favorable, they would look hard for a problem, or change a process or parameter to give the politically acceptable "more reasonable" result. By contrast, however, I suspect that if the model were telling them what they wanted to hear, errors would go undetected."

Summary Findings

The review of the TROA model illustrates that it is seriously flawed in several significant respects. Some of these flaws prevent a valid model review from being conducted using accepted scientific methodology, given the short time frame allocated for such reviews. Other flaws are more serious and cripple the model from being used in support of the Draft & Final EIS/EIR. Several of the TROA model flaws identified during Principia's review are fatal and prevent it from being used to evaluate the consequences of water allocation plans for the TROA system and its future operations.

It is Principia's scientific view based upon this review, and the experiences of its scientists from modeling reviews conducted during the past two decades, that model flaws which have serious consequences must be revealed and then evaluated through a process of wide and unhindered

scrutiny by scientific peers. Thereafter, each flaw must be rectified through rational means and then rigorously tested before a model is finalized and used for predictive purposes. The ultimate goal of a scientific computer model is to create confidence in the user that the model will actually predict an outcome that can be relied upon. It is by documenting such efforts in an open and thorough manner that the affected public will be persuaded that such confidence is indeed merited. Principia's opinion of the TROA model is that it provides little, if any, confidence in the data it is evaluating and no confidence that the output created by this TROA is either reliable or usable for purposes of decision making. Bill Sikonia arrived at these very same conclusions and stated so in his July 26, 1996 memorandum (TCID-152): "I think the model is in such a state that it is essentially impossible to go through with understanding. Furthermore, I could not and would not defend it in court." Later, in the same memorandum, Mr. Sikonia concludes, "Because of the lack of a clear understanding of the model's operation, I do not think one can assure the model results are valid. (In fact, I have examples of coding errors that definitely change model results)."

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